

INFECTIOUS DISEASES IN SOUTH DAKOTA 2003

The South Dakota Department of Health (DOH) is authorized by South Dakota Codified Law 34-22-12 and Administrative Rules Article 44:20 to receive and process mandatory reports of communicable diseases by physicians, hospitals, laboratories, and institutions.

Category I: Report immediately on suspicion of disease	Category II: Report within 3 days
<p>Anthrax (<i>Bacillus anthracis</i>) Botulism (<i>Clostridium botulinum</i>) Cholera (<i>Vibrio cholerae</i>) Dengue fever (<i>flavivirus</i>) Diphtheria (<i>Corynebacterium diphtheriae</i>) Enterohemorrhagic <i>E. coli</i> (EHEC) shiga-toxin producing (<i>Escherichia coli</i>), includes <i>E. coli</i> O157:H7 Measles (<i>paramyxovirus</i>) Meningococcal disease, invasive (<i>Neisseria meningitidis</i>) Pertussis (<i>Bordetella pertussis</i>) Plague (<i>Yersinia pestis</i>) Poliomyelitis (<i>picornavirus</i>) Rabies, human and animal (<i>rhabdovirus</i>) Ricin toxin Rubella and congenital rubella syndrome (<i>togavirus</i>) Smallpox (<i>Variola</i>) Tularemia (<i>Francisella tularensis</i>) Typhoid (<i>Salmonella typhi</i>) Viral Hemorrhagic Fevers (filoviruses, arenaviruses)</p> <p>Outbreaks: - Acute upper respiratory illness - Diarrheal disease - Foodborne - Illnesses in child care settings - Nosocomial - Rash illness - Waterborne</p> <p>Syndromes suggestive of bioterrorism and other public health threats Unexplained illnesses or deaths in humans or animals</p>	<p>Acquired immunodeficiency syndrome (AIDS) Brucellosis (<i>Brucella</i> spp.) Campylobacteriosis (<i>Campylobacter</i> spp.) Chancroid (<i>Haemophilus ducreyi</i>) Chlamydia infections (<i>Chlamydia trachomatis</i>) Cryptosporidiosis (<i>Cryptosporidium parvum</i>) Cyclosporiasis (<i>Cyclospora cayetanensis</i>) Drug resistant organisms: Vancomycin-resistant and -intermediate <i>Staphylococcus aureus</i> (VRSA and VISA) Drug resistant <i>Streptococcus pneumoniae</i> (DRSP), invasive Ehrlichiosis (<i>Ehrlichia</i> spp.) Encephalitis, arboviral (<i>Eastern and Western equine, California serotype, St. Louis, Japanese, Powassan and West Nile Virus</i>) Epsilon toxin of <i>Clostridium perfringens</i> Giardiasis (<i>Giardia lamblia</i> / <i>intestinalis</i>) Glanders (<i>Burkholderia mallei</i>) Gonorrhea (<i>Neisseria gonorrhoeae</i>) <i>Haemophilus influenzae</i> type b disease, invasive Hantavirus pulmonary syndrome (<i>hantavirus</i>) Hemolytic uremic syndrome Hepatitis, acute viral A, B, C, D, and E Hepatitis B infection, perinatal <i>Herpes simplex</i> virus infection, neonatal or genital Human immunodeficiency virus infection (HIV) Influenza: all laboratory confirmed cases, and - weekly reports of number of rapid antigen influenza positive tests and total number tested</p> <p>Legionellosis (<i>Legionella</i> spp.) Leprosy/Hansen's disease (<i>Mycobacterium leprae</i>) Listeriosis (<i>Listeria monocytogenes</i>) Lyme disease (<i>Borrelia burgdorferi</i>) Malaria (<i>Plasmodium</i> spp.) Meliodosis (<i>Burkholderia pseudomallei</i>) Mumps (<i>paramyxovirus</i>) Nipah virus (<i>paramyxovirus</i>) Psittacosis (<i>Chlamydophila psittaci</i>) Q fever (<i>Coxiella burnetii</i>) Rocky Mountain spotted fever (<i>Rickettsia rickettsii</i>) Salmonellosis (<i>Salmonella</i> spp.) Shigellosis (<i>Shigella</i> spp.) <i>Staphylococcus enterotoxin B</i> Streptococcal disease, Group A, invasive Streptococcal disease, Group B, invasive <i>Streptococcus pneumoniae</i>, invasive, in a child less than 5-years of age Syphilis (<i>Treponema pallidum</i>) Tetanus (<i>Clostridium tetani</i>) Toxic shock syndrome Transmissible spongiform encephalopathies Trichinosis (<i>Trichinella spiralis</i>) Tuberculosis (<i>Mycobacterium tuberculosis</i> and <i>Mycobacterium bovis</i>) active disease and infection (positive skin test) Typhus fever (<i>Rickettsia prowazekii</i>) Varicella death Yellow fever (<i>flavivirus</i>)</p>

Category I diseases are reportable immediately by telephone* on the day of recognition or strong suspicion of disease. Category II diseases are reportable by telephone*, mail**, facsimile***, reporting website**** or courier, within 3 days after recognition or strong suspicion of disease.

*Telephones: 24 hour answering device 1-800-592-1804; during working hours 1-800-592-1861. After hours to report Category I diseases, call cellular phone 605-280-4810.

Mail in a sealed envelope addressed to the DOH, Office of Disease Prevention, 615 E. 4th Street, Pierre, SD 57501, and marked "Confidential Medical Report". *Fax 605-773-5509. ****Secure reporting website: <https://www.state.sd.us/doh/diseasereport>

COMMUNICABLE DISEASE SURVEILLANCE

The Department of Health (DOH) has adopted administrative rules, ARSD44:20, authorizing a statewide surveillance system for communicable diseases. The rules also establish public health measures that control and prevent disease transmission.

Infectious disease surveillance is the ongoing collection, analysis, interpretation, and dissemination of health data. This type of assessment is a core public health function. Communicable disease surveillance monitors patterns of disease occurrence, which contribute to the health status of South Dakota's population. Surveillance can detect sudden changes in disease occurrence, such as outbreaks, or identify long-term disease trends, or monitor new and emerging diseases. Surveillance activities are linked to public health actions, such as investigation, control and prevention, evaluation, planning, and allocating resources to address the diseases affecting the population.

An important surveillance component is sharing infectious disease data with health care providers, public health agencies, the general population, academia, and public health and medical policy makers at local, state and national levels. Surveillance assessment reports should serve to inform and motivate.

Table 53 catalogs the infectious disease reports from 1993 to 2003. Table 54 reports the 2003 disease numbers by county of residency, statewide total, and shows the statewide incidence rate (cases per 100,000 population). Each disease is compared to the median case count of the previous 5 years (1998-2002), and the percentage increase or decrease is shown. Table 55 presents selected diseases stratified by gender, race and age group.

In 2003 the following diseases (cases) were reported and found to meet the case definition:

Anthrax (0)
Botulism (1)
Brucellosis (1)
Campylobacteriosis (188)
Chancroid (0)
Chlamydia trachomatis infectious (2606)
Cholera (0)
Cryptosporidiosis (49)
Dengue fever (0)
Diphtheria (0)
<i>E. coli</i> O157:H7 (29)
Giardiasis (89)
Gonorrhea (226)
<i>Haemophilus influenzae</i> type B (1)
Hantavirus pulmonary syndrome (1)
Hemolytic uremic syndrome (1)
Hepatitis A (0)
Hepatitis B (4)
Hepatitis C (0)
Herpes simplex, genital and neonatal (297)
HIV and AIDS (25)
Legionellosis (2)
Leprosy (0)
Listeriosis (0)
Lyme Disease (1)
Malaria (3)
Measles (0)
Meningococcal disease (1)
Mumps (0)
Pertussis (7)
Plague (0)
Polio (0)
Psittacosis (0)
Q fever (0)
Rabies, animal (132)
Rabies, human (0)
Rocky Mountain Spotted Fever (5)
Rubella and congenital rubella syndrome (0)
Saint Louis Encephalitis (2)
Salmonellosis (131)
Shigellosis (17)
Streptococcal disease, Group A, invasive (25)
Streptococcal disease, Group B, invasive (14)
<i>Streptococcus pneumoniae</i> , drug resistant (1)
Syphilis, primary and secondary (2)
Tetanus (0)
Toxic shock syndrome (1)
Trichinosis (0)
Tuberculosis (20)
Tularemia (5)
Typhoid (0)
West Nile neuroinvasive disease (170)
West Nile fever (869)

Table 53. Reportable Diseases in South Dakota, 1993-2003.

Diseases	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Anthrax	0	0	0	0	0	0	0	0	0	1	0
Botulism	0	0	0	0	0	0	1	1	0	0	1
Brucellosis	1	0	0	0	0	0	0	0	0	0	1
Campylobacteriosis	69	81	100	71	108	103	140	141	160	198	188
Chancroid	0	0	0	0	0	0	0	0	0	0	0
Chlamydia trachomatis infections	1643	1432	1317	1538	1439	1573	1554	1835	1821	2215	2606
Cholera	0	0	0	0	0	0	0	0	0	1	0
Cryptosporidiosis	NR	NR	NR	0	23	25	7	15	8	42	49
Dengue fever	0	0	0	0	0	0	0	0	0	1	0
Diphtheria	0	0	0	0	1	0	0	0	0	0	0
E. coli O157:H7	0	18	23	26	29	37	47	56	44	41	29
Giardiasis	155	140	171	89	127	181	143	108	106	83	89
Gonorrhea	276	245	244	176	172	221	192	277	289	263	226
Haemophilus influenzae type b	2	2	1	1	3	1	4	1	0	1	1
Hantavirus pulmonary syndrome	0	0	2	0	0	0	0	1	0	0	1
Hemolytic uremic syndrome	0	0	0	0	1	0	4	2	1	0	1
Hepatitis A	18	39	99	43	27	40	10	3	3	3	0
Hepatitis B	0	4	2	5	1	4	1	2	1	3	4
Hepatitis C, non-A/B	0	0	1	0	0	0	0	0	0	1	0
Herpes simplex, genital and neonatal	88	110	102	102	94	142	275	339	345	310	297
HIV and AIDS	26	24	35	24	25	17	27	22	22	21	25
Legionellosis	0	2	3	3	4	7	6	2	3	4	2
Leprosy	0	0	0	0	0	1	0	0	0	0	0
Listeriosis	0	0	0	1	1	0	1	0	0	1	0
Lyme disease	0	0	0	0	1	0	0	0	0	2	1
Malaria	2	0	0	2	3	1	0	1	0	2	3
Measles	0	0	0	0	8	0	0	0	0	0	0
Meningitis, aseptic	22	3	26	7	20	210	27	29	62	NR	NR
Meningococcal disease	7	9	11	10	6	9	11	6	5	2	1
Mumps	0	0	0	0	0	0	0	0	0	0	0
Plague	0	0	0	0	0	0	0	0	0	0	0
Pertussis	8	26	12	4	5	8	8	11	5	8	7
Polio	0	0	0	0	0	0	0	0	0	0	0
Psittacosis	0	0	0	0	0	0	0	0	0	0	0
Q fever	NR	NR	NR	NR	NR	NR	NR	NR	0	1	0
Rabies, animal	49	44	105	132	94	166	180	96	58	96	132
Rabies, human	0	0	0	0	0	0	0	0	0	0	0
Rocky Mountain Spotted Fever	3	13	1	1	2	0	4	2	2	1	5
Rubella and congenital rubella	0	0	0	0	0	0	0	0	0	0	0
St. Louis Encephalitis	0	0	0	0	0	0	0	0	0	0	2
Salmonellosis	99	143	108	119	90	132	100	100	151	121	131
Shigellosis	111	207	200	94	31	33	18	8	716	157	17
Streptococcal disease, Group A,	NR	NR	NR	NR	15	9	11	16	17	14	25
Streptococcal disease, Group B,	NR	NR	NR	NR	NR	NR	NR	NR	NR	20	14
Streptococcus pneumoniae, drug resist.	NR	NR	NR	NR	0	0	3	8	6	1	1
Syphilis, Primary and Secondary	0	2	0	0	1	1	0	0	1	0	2
Tetanus	0	0	0	0	0	1	0	0	0	0	0
Toxic shock syndrome	0	0	1	0	1	2	0	2	0	1	1
Trichinosis	0	0	0	0	0	0	0	0	0	0	0
Tuberculosis	16	28	28	19	19	23	21	16	13	13	20
Tularemia	17	2	19	11	4	3	7	13	7	3	5
Typhoid	0	0	0	0	0	0	0	0	0	0	0
West Nile neuroinvasive disease	0	0	0	0	0	0	0	0	0	14	170
West Nile fever	0	0	0	0	0	0	0	0	0	23	869

*NR= not reportable

Table 54a. South Dakota Selected Notifiable Diseases by County, 2003 (continued).

County	Campylobacteriosis	Cryptosporidiosis	E. coli O157:H7	Giardiasis	H IV/AIDS	Pertussis	Rabies, animal	Salmonellosis	Shigellosis	Streptococcal disease, Group A, invasive	Streptococcal disease, Group B, invasive	Tuberculosis	West Nile Neuroinvasive illness	Chlamydia	Gonorrhea	Genital Herpes
Aurora	≤3	0	≤3	0	Due to confidentiality issues, HIV/AIDS is not reported by county	0	6	0	0	0	0	0	0	≤3	0	0
Beadle	4	4	≤3	4		0	5	5	0	0	0	≤3	≤3	44	4	7
Bennett	≤3	≤3	0	0		≤3	0	0	0	0	0	0	≤3	24	4	≤3
BonHomme	≤3	7	≤3	5		0	≤3	4	≤3	0	0	0	≤3	8	0	≤3
Brookings	≤3	≤3	≤3	0		0	4	≤3	≤3	0	≤3	0	4	70	≤3	12
Brown	10	≤3	≤3	4		0	6	7	0	0	0	≤3	6	55	≤3	25
Brule	0	0	≤3	≤3		0	4	≤3	0	≤3	0	0	≤3	9	≤3	≤3
Buffalo	0	0	0	0		0	≤3	0	0	0	0	0	≤3	27	0	0
Butte	≤3	0	0	≤3		0	≤3	≤3	0	0	0	0	7	11	0	0
Campbell	0	0	0	0		0	0	0	0	0	0	0	≤3	0	0	0
CharlesMix	5	0	≤3	≤3		0	9	≤3	≤3	≤3	0	≤3	≤3	81	≤3	≤3
Clark	≤3	0	0	≤3		0	≤3	≤3	0	0	0	0	≤3	≤3	0	0
Clay	≤3	≤3	≤3	≤3		0	≤3	5	0	0	0	0	≤3	31	≤3	7
Codington	6	≤3	0	≤3		0	≤3	6	0	0	0	0	≤3	61	≤3	12
Corson	0	0	0	0		0	≤3	5	0	0	≤3	0	≤3	53	20	0
Custer	≤3	0	0	0		0	0	0	0	0	0	0	0	16	≤3	≤3
Davison	6	0	≤3	≤3		0	≤3	5	≤3	≤3	0	0	5	38	≤3	6
Day	≤3	0	0	≤3		0	4	0	0	0	≤3	≤3	≤3	4	≤3	0
Deuel	≤3	0	0	0		0	≤3	0	0	0	≤3	0	≤3	≤3	≤3	≤3
Dewey	≤3	0	0	0		0	0	≤3	0	0	0	0	5	125	24	≤3
Douglas	5	0	0	≤3		0	≤3	≤3	0	0	0	0	0	0	0	0
Edmunds	5	0	0	0		0	≤3	0	0	0	0	0	0	≤3	0	0
Fall River	≤3	0	0	0		0	0	0	0	0	0	0	7	6	≤3	≤3
Faulk	≤3	0	≤3	0		0	≤3	0	0	0	0	0	≤3	0	0	0
Grant	≤3	≤3	≤3	≤3		0	≤3	≤3	0	0	0	0	0	5	0	≤3
Gregory	≤3	0	0	0		0	≤3	≤3	0	0	0	0	0	7	0	0
Haakon	≤3	0	0	0		0	0	≤3	0	0	0	0	≤3	≤3	0	0
Hamlin	≤3	0	0	0		≤3	4	0	0	0	0	0	≤3	4	0	0
Hand	4	0	0	0		0	≤3	0	0	0	0	0	≤3	0	0	0
Hanson	≤3	0	0	0		0	≤3	≤3	0	0	0	0	≤3	0	0	0
Harding	≤3	0	0	0		0	0	0	0	0	0	0	≤3	≤3	0	≤3
Hughes	≤3	0	0	0		≤3	4	≤3	0	≤3	0	≤3	≤3	60	≤3	11
Hutchinson	4	0	≤3	≤3		0	7	≤3	0	0	0	0	≤3	6	≤3	≤3
Hyde	0	0	0	0		0	0	0	0	0	0	0	≤3	≤3	0	0
Jackson	0	0	0	0		0	0	0	0	0	0	0	0	14	5	0
Jerauld	≤3	0	0	0		0	≤3	0	0	0	0	0	≤3	≤3	0	0

Continued

Table 54b. South Dakota Selected Notifiable Diseases by County, 2003 (continuing).

County	Campylobacteriosis	Cryptosporidiosis	E. coli O157:H7	Giardiasis	H IV/AIDS	Pertussis	Rabies, animal	Salmonellosis	Shigellosis	Streptococcal disease, Group A, invasive	Streptococcal disease, Group B, invasive	Tuberculosis	West Nile neuroinvasive illness	Chlamydia	Gonorrhea	Genital Herpes
Jones	0	0	0	0	Due to confidentiality issues, HIV/AIDS is not reported by county	0	0	0	0	0	0	0	0	0	0	0
Kingsbury	4	≤3	0	≤3		0	6	≤3	0	0	0	0	≤3	≤3	0	≤3
Lake	10	0	0	0		0	≤3	0	0	0	0	0	≤3	18	≤3	4
Lawrence	6	0	0	≤3		0	0	≤3	0	0	0	≤3	≤3	52	≤3	10
Lincoln	≤3	0	0	7		0	≤3	4	0	0	0	0	≤3	17	≤3	5
Lyman	5	0	0	0		0	0	0	≤3	0	0	0	≤3	23	0	0
Marshall	≤3	≤3	0	0		0	≤3	≤3	0	0	0	0	0	5	0	0
McCook	≤3	0	0	0		0	8	0	0	0	0	0	≤3	5	0	0
McPherson	≤3	0	≤3	0		0	≤3	0	0	0	0	0	0	0	0	0
Meade	≤3	0	0	0		0	0	0	0	0	0	0	6	21	≤3	≤3
Mellette	0	0	0	0		0	0	0	0	0	0	0	≤3	8	0	0
Miner	≤3	0	≤3	≤3		0	5	0	0	0	0	0	0	0	0	0
Minnehaha	22	7	≤3	29		≤3	6	29	≤3	11	8	≤3	15	606	31	101
Moody	≤3	≤3	0	0		0	≤3	0	0	0	0	0	0	26	0	0
Pennington	6	≤3	≤3	≤3		0	≤3	7	0	≤3	≤3	≤3	28	421	57	53
Perkins	≤3	0	0	0		0	0	≤3	0	0	0	0	≤3	0	0	0
Potter	0	0	≤3	≤3		0	≤3	≤3	0	0	0	0	≤3	0	0	0
Roberts	5	≤3	≤3	≤3		0	≤3	5	0	≤3	0	0	≤3	64	4	0
Sanborn	5	0	0	0		0	≤3	≤3	0	0	0	0	≤3	≤3	0	0
Shannon	0	0	0	0		≤3	0	4	≤3	≤3	0	4	11	298	26	≤3
Spink	≤3	0	0	0		0	≤3	0	0	0	0	0	4	7	0	0
Stanley	0	0	0	0		0	0	≤3	0	0	0	0	0	≤3	0	0
Sully	0	0	0	0		0	0	0	0	≤3	0	≤3	0	0	0	0
Todd	6	0	0	≤3		0	0	≤3	0	≤3	0	≤3	≤3	165	7	≤3
Tripp	≤3	0	0	≤3		0	≤3	≤3	0	0	0	0	≤3	8	0	≤3
Turner	5	0	0	0		0	5	≤3	0	0	≤3	0	≤3	6	0	6
Union	7	≤3	0	0		0	0	≤3	≤3	0	0	0	≤3	7	≤3	0
Walworth	≤3	0	0	0		0	≤3	≤3	0	0	0	0	≤3	19	≤3	≤3
Yankton	5	16	≤3	11		0	≤3	7	0	≤3	0	0	≤3	34	7	9
Ziebach	0	0	0	0		0	0	≤3	0	≤3	0	0	0	13	5	0
South Dakota	188	49	29	89	21	7	132	131	17	25	14	20	170	2606	226	297
Rate per 100,000	24.8	6.5	3.8	11.8	2.7	0.9	na	17.3	2.2	1.9	2.6	2.6	1.9	344	29.9	39.3
5-year median	141	15	44	108	22	8	96	121	33	14	NA	16	NA	1821	263	310
% change of median	32%	220%	-34%	-17%	14%	-13%	40%	8%	-48%	79%	NA	25%	NA	43%	-14%	-4%

In 2003 there were also 5 cases of tularemia, 5 cases of Rocky Mountain spotted fever, 4 cases of hepatitis B, 4 cases of enterohemorrhagic E.coli (non-O157:H7), 3 cases of imported Malaria, 2 cases of legionellosis, 2 cases of St. Louis Encephalitis disease, 2 cases of primary syphilis and 1 case each of Lyme disease, wound botulism, brucellosis, Hantavirus Pulmonary Syndrome, *Neisseria meningitidis* disease, Hemolytic Uremic Syndrome, and Toxic Shock Syndrome.

To safeguard privacy "≤3" designates strata with 1, 2 or 3 cases.

Table 55. South Dakota Notifiable Disease Summary by Gender, Race, and Age, 2003.

Disease	Gender*					Race*						Median age	Age group (in years)							
	Total	Male (%)		Female (%)		White (%)		Native American(%)		Other or unknown(%)			<1	1-4	5-14	15-24	25-39	40-64	≥65	
Campylobacteriosis	188	119	63%	69	37%	172	91%	13	7%	3	2%	21	8	34	26	37	28	36	19	
Chlamydia	2606	741	28%	1863	71%	1253	48%	1196	46%	157	6%	21	3		30	1964	530	47	2	
Cryptosporidiosis	49	24	49%	25	51%	44	90%	5	10%	0	0%	23	0	12	10	6	13	6	2	
E. coli O157:H7	29	10	34%	19	66%	28	100%	0	0%	0	0%	10	2	9	5	0	3	5	4	
Giardiasis	89	41	46%	48	54%	84	94%	4	4%	1	1%	30	1	19	11	4	28	22	4	
Gonorrhea	226	93	41%	133	59%	80	35%	130	58%	16	7%	22	0	0	1	148	62	13	0	
HIV/AIDS	25	21	84%	4	16%	14	56%	6	24%	5	20%	38	0	0	0	5	9	11	0	
Herpes, genital	297	47	16%	248	84%	264	89%	17	6%	16	5%	26	6		2	128	106	49	5	
Legionellosis	2	1	50%	1	50%	2	100%	0	0%	0	0%	54	0	0	0	0	0	2	0	
Pertussis	7	3	43%	4	57%	6	86%	1	14%	0	0%	0	5	2	0	0	0	0	0	
Salmonellosis	131	65	50%	66	50%	113	86%	14	11%	4	3%	27	9	19	18	12	29	21	23	
Shigellosis	17	12	71%	5	29%	10	59%	7	41%	0	0%	8	0	6	3	2	2	2	2	
Streptococcus A, invasive	25	13	52%	12	48%	19	76%	6	24%	0	0%	55	0	0	2	1	4	8	10	
Streptococcus B, invasive	14	7	50%	7	50%	11	79%	2	14%	1	7%	25	5	0	0	2	2	3	2	
Tuberculosis	20	11	55%	9	45%	6	30%	10	50%	4	20%	53	0	2	1	3	1	6	7	
West Nile neuroinvasive disease	170	106	62%	64	38%	140	82%	30	18%	0	0%	50	2	2	2	13	36	65	50	

Total cases reported on this table may differ slightly from row totals due to incomplete case information.

*South Dakota's overall population is 50% male and 50% female; 89% White, 9% Native American and 2% other races.

VACCINE-PREVENTABLE DISEASES: Diphtheria, Pertussis, Tetanus, Measles, Mumps, Rubella, Polio, *Haemophilus influenzae* type b disease, Varicella, Hepatitis A and B.

The Centers for Disease Control and Prevention (CDC) regards vaccination as one of the 10 great public health achievements of the twentieth century. Vaccination has resulted in the global eradication of smallpox, the elimination of poliomyelitis from the Western Hemisphere, and the control of measles, rubella, tetanus, diphtheria, *Haemophilus influenzae* type b (Hib), and other infectious diseases in the United States and many other countries.

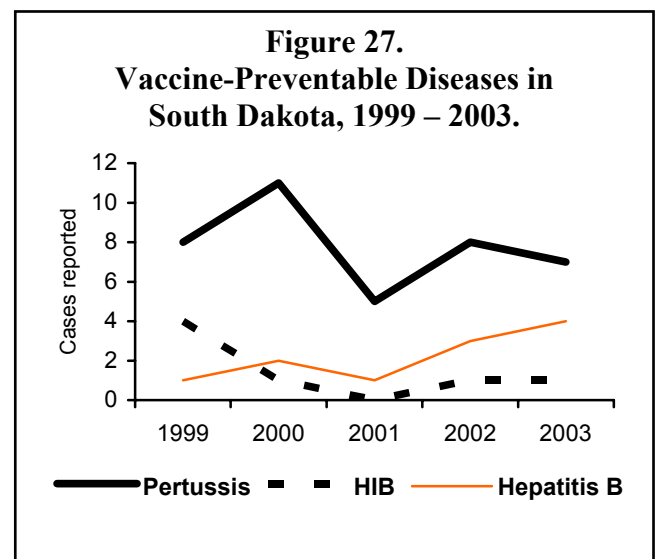
Immunization is a fundamental component of comprehensive child health care. The South Dakota statewide goal is to immunize 90 percent of 2-year old children for measles, mumps, rubella, diphtheria, pertussis, Polio, *Haemophilus influenzae* type b and varicella.

In South Dakota factors contributing to increased vaccination rates and disease reduction include enacting a statewide school immunization law in 1971; implementing child-care facility immunization standards; providing vaccines (measles vaccine distribution began in 1967, rubella in 1969, mumps in 1976, *Haemophilus influenzae* b in 1989, hepatitis B in 1993, hepatitis A in 1995, and chicken pox in 2001); and since 1978 providing free supplies of all required childhood vaccines for private and public clinic use. In 1996 the South Dakota Immunization Information System (SDIIS) was implemented, and it currently networks the immunization records of 237 health centers across the state.

During 2003 no cases of measles, mumps, rubella, diphtheria, tetanus, or polio were reported in South Dakota. Figure 27 reports the numbers of vaccine-preventable diseases reported in South Dakota over the past 5 years.

Seven cases of pertussis (whooping cough) were reported in South Dakota in 2003. Five of this year's cases were in children less than 3 years old.

Complications of pertussis may include severe cough, pneumonia, otitis media, seizures, encephalopathy, brain damage, and occasionally death. Pertussis is most severe in young infants, with 70 percent of all pertussis deaths occurring during the first year of life. The bacterial agent, *Bordetella pertussis*, has been isolated from 25 percent of adults with cough illness lasting more than 7 days. These adults often serve as a source of infection for unimmunized children.



A decade-long decreasing trend of *Haemophilus influenzae* type b is evident from the 54 cases reported in 1990 down to zero in 2001. However, recent data reveals one reported case each in 2002 and 2003. Invasive *H. influenzae* disease can cause meningitis, pneumonia, osteomyelitis, epiglottitis, cellulitis and pericarditis. This preventable disease has a case-fatality rate of 2 percent to 5 percent.

In 1996 the national Advisory Committee on Immunization Practices (ACIP) made their first statement on recommendations for usage of live, attenuated varicella virus vaccine (VARIVAX) which was licensed in 1995. In 1999 ACIP expanded the recommendations to include childcare and school entry requirements. During

the 2000 South Dakota legislative session Senate Bill 42 was passed adding varicella vaccine to the list of immunizations required for school entry. Varicella (chickenpox) deaths became a reportable disease event in South Dakota in 2001.

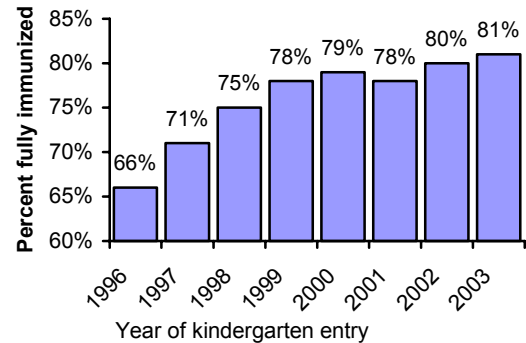
Immunization requirements for entrance into South Dakota schools since 2000 have included:

- a) 4 doses of diphtheria, tetanus, pertussis vaccine (DTaP or DTP), and
- b) 3 doses of poliovirus vaccine, and
- c) 2 doses of measles vaccine, and
- d) 2 doses of rubella vaccine, and
- e) 2 doses of mumps vaccine, and
- f) 1 dose of chicken pox vaccine.

The DOH strives to enroll all children in South Dakota in SDIIS. Each year a retrospective immunization rate study is conducted. The immunization rates are based on the percentage of the current year's kindergarten students who were adequately immunized with four doses of DTaP, three doses of Polio, and one dose of Measles-Mumps-Rubella vaccines at 24 months old.

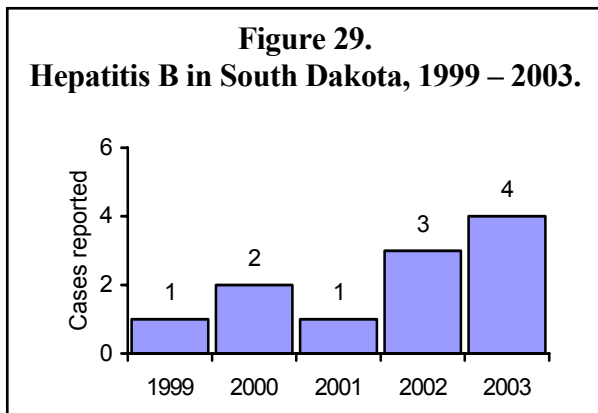
For example, in 1995 there were 10,470 children born in South Dakota. When these children entered kindergarten in fall 2000, their immunization records were reviewed by their local school to make sure they had had all the immunizations required by South Dakota law. This information is reported to the DOH and the percent of those fully immunized is calculated. The retrospective survey reports immunization rates at 24 months of age for this year's kindergarten children.

Figure 28.
South Dakota Statewide 2-Year Old
Immunization Rates, 1996 - 2003
(SDIIS Retrospective Survey).



In 2003, 81 percent (8266/10265) of children entering kindergarten in South Dakota were adequately immunized (Figure 28). There has been a generally improving trend in vaccination coverage since the SDIIS was launched in 1996, but we are still far short of our 90 percent immunization coverage objective.

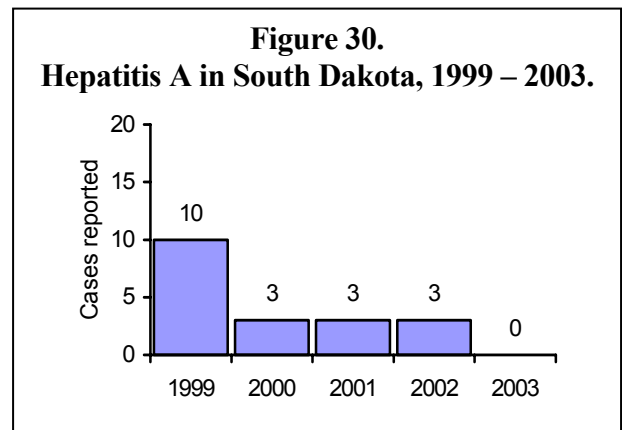
Viral Hepatitis. There were 4 cases of acute hepatitis B reported in 2003 (Figure 29). Hepatitis B is caused by a virus transmitted by blood and other body fluids. It can cause lifelong infection, liver cirrhosis, liver cancer, liver failure, and death. As part of a nationwide prevention program, Hepatitis B vaccine has been made available for routine use in newborns and for children and adolescents who did not complete vaccination as infants. Hepatitis B vaccination is not mandatory for school entry in South Dakota. Adults at risk for hepatitis B infection who should consider vaccination include: people who have more than one sex partner in six months, men who have sex with other men, sex contacts of infected people, people who inject illegal drugs, health care and public safety workers who might be exposed to infected blood or body fluids, household contacts of persons with chronic HBV infection and hemodialysis patients.



In 2003 there were no cases of hepatitis A reported in South Dakota (Figure 30). Over the past 5 years there has been a decreasing trend in the incidence of hepatitis A in South Dakota. The Healthy People 2010 target is 4.5 new cases of hepatitis A per 100,000 population.

Hepatitis A is a virus shed in the feces and transmitted person-to-person or by contaminated food or water. The illness causes mild to serious liver disease. To prevent hepatitis A the vaccine

has been made available for use in high-risk children 2-18 years of age.



Although more than 300 reports of patients with anti-hepatitis C virus antibody were received by the DOH, no cases of acute hepatitis C were reported.

SEXUALLY TRANSMITTED DISEASES

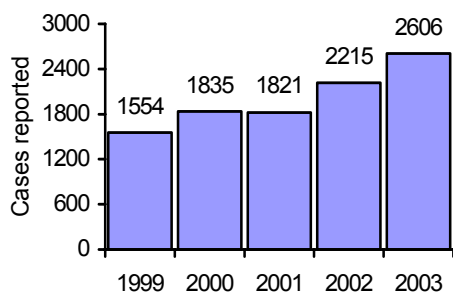
Sexually transmitted diseases (STDs) include several bacterial and viral infections that can be passed person-to-person by genital, oral or anal sexual contact. STDs include gonorrhea, chlamydia, genital herpes, syphilis, genital warts, HIV infection, chancroid, trichomoniasis, lymphogranuloma venereum, and others. All STDs have the potential to cause serious illness, but most are treatable. STDs are preventable by abstinence, uninfected partner monogamy, and proper use of condoms.

Over the past decade, South Dakota has generally reduced the occurrence of STDs through intensive efforts to identify and treat infected persons. Although gonorrhea and chlamydia cases have decreased, they are still common. Syphilis and lymphogranuloma venereum have become rare, and chancroid is almost unheard of in our state. STDs in South Dakota primarily affect young

people between the ages of 15 and 24 years, and minority populations.

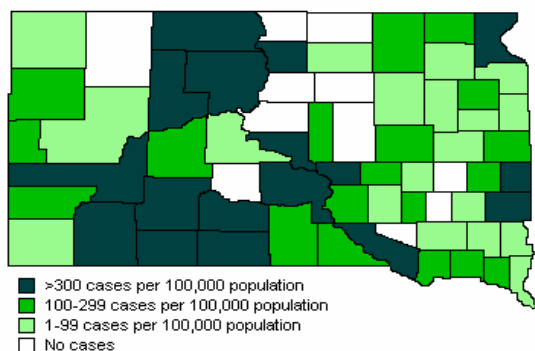
Chlamydia. Chlamydia is the most commonly reported STD in South Dakota. During 2003 the DOH received 2,606 case reports (Figure 31), which is an incidence rate of 344 cases per 100,000 population. This was an increase of 43 percent over the 5-year median. Counties with the highest incidence (cases per 100,000 population) included Shannon (2331), Dewey (2066), Todd (1780), Buffalo (1341), Corson (1256), Charles Mix (880), Bennett (675) and Roberts (639) (Figure 32).

Figure 31.
Chlamydia in South Dakota,
1999 – 2003.



Nationally the incidence of chlamydia was 304 cases per 100,000 population. South Dakota ranked 12th with an incidence of 344.

Figure 32.
Chlamydia Incidence Rates by County,
South Dakota, 2003.

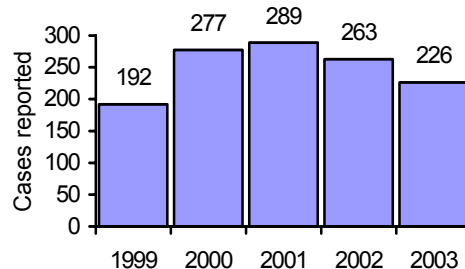


Screening for chlamydia infection has become standard practice for many health care providers in the state. Indian Health Service, family planning clinics, and many private providers have incorporated chlamydia screening as part of the routine health examination for sexually active young women. Screening follow-up encompasses treatment and partner referral. Because screening efforts are focused on women, female infections are more likely to be identified than males. Our data show that 71 percent of chlamydia cases were female in 2003.

Young people between 15 and 24 years old accounted for 71 percent of the chlamydia cases reported in 2003. Although Native Americans comprise 9 percent of the state's population, a disproportionate share, 46 percent, of chlamydia case reports were in this population group. This higher disease rate necessitates continued targeting of screening and disease intervention among Native Americans.

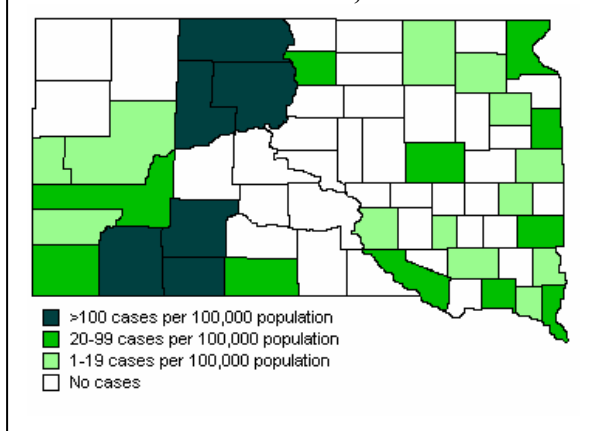
Gonorrhea. Over the past 2 years South Dakota has seen a decrease in gonorrhea from a peak in 2001. There were 226 cases of gonorrhea in 2003 (Figure 33), which is an incidence of 30 cases per 100,000 population, which is a 14 percent decrease over the 5-year median.

Figure 33.
Gonorrhea in South Dakota,
1999 – 2003.



Thirty-five percent of the gonorrhea case reports occurred in the white population, and 59 percent were female. The Healthy People 2010 objective is 19 new cases of gonorrhea per 100,000 population. Counties with the highest incidence (cases per 100,000 population) included Corson (474), Dewey (397), Shannon (203), Ziebach (199), Jackson (176) and Bennett (113) (Figure 34).

Figure 34.
Gonorrhea Incidence Rates by County,
South Dakota, 2003.

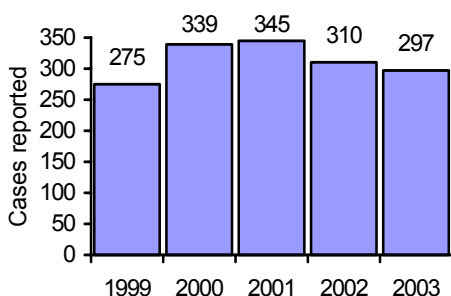


Nationally the incidence of gonorrhea was 116 cases per 100,000 population. South Dakota ranked 41st with an incidence of 30. The year 2010 objective is 19.

Sexually active adolescents and young adults are the population most at risk with 65 percent of the gonorrhea cases reported being 15 to 24 years old. Females represented 59 percent of the case reports during 2003. The Native American population was disproportionately affected with 58 percent of the reported cases.

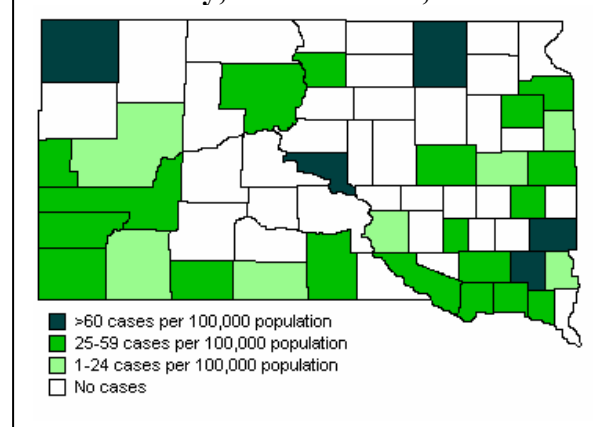
Herpes. Genital herpes became reportable in 1993 in South Dakota. Since then the case reports have increased. In 2003, 297 cases were reported (Figure 35), which is a 4 percent decrease over the 5-year median, and a 4 percent decrease over 2002.

Figure 35.
Genital Herpes in South Dakota,
1999 – 2003.



Eighty-nine percent of the herpes case reports occurred in the white population, and 84 percent were female. Counties with the highest incidence (cases per 100,000 population) included Brown (71), Turner (69), Minnehaha (67) and Hughes (67) (Figure 36).

Figure 36.
Genital Herpes Incidence Rates by
County, South Dakota, 2003.



Genital herpes is a recurrent, incurable viral disease caused by the herpes simplex virus 1 or 2. The infections may be asymptomatic, cause genital lesions, or rarely, severe complications such as encephalitis or disseminated infection.

Management of genital herpes depends on clinical presentation, and may include antiviral therapy and counseling for behavior adaptations and prevention.

Syphilis. There were two cases of infectious primary syphilis and three cases of early latent syphilis reported in South Dakota in 2003 (Table 56).

The CDC's national syphilis elimination strategy has a goal of eliminating sustained transmission of syphilis by 2005. South Dakota participates in syphilis elimination through expedited case management, partner referral, and interstate coordination of outbreak investigations. Over the last several years only sporadic reports of syphilis have been reported in the state. Due to prompt

intervention and control efforts, syphilis transmission has typically been limited and has not spread within the state.

Table 56.
Syphilis in South Dakota, 1991-2003.

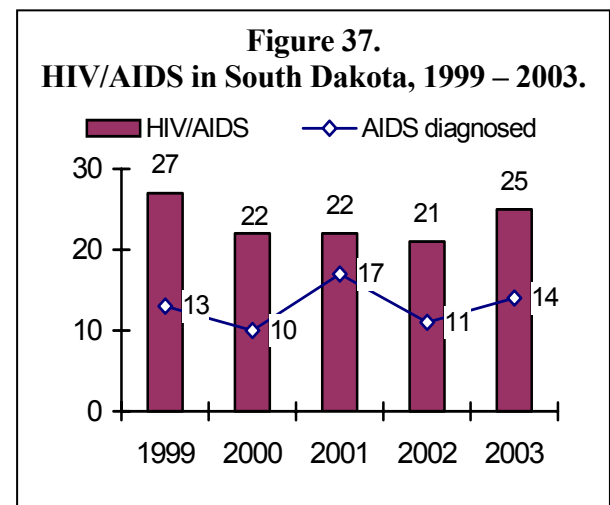
Year	Primary and Secondary	Congenital	Early Latent	Late Latent
1991	1	0	5	5
1992	1	0	0	0
1993	0	0	1	0
1994	2	0	0	1
1995	0	0	1	6
1996	0	0	0	2
1997	1	0	2	5
1998	1	1	0	1
1999	0	1	1	1
2000	0	0	0	1
2001	1	0	0	0
2002	0	0	0	0
2003	2	0	3	0
Total	9	2	13	22

HIV/AIDS

Acquired immunodeficiency syndrome (AIDS) is caused by an infection of human immunodeficiency virus (HIV). HIV targets the CD4+ lymphocyte, diminishing the body's immuno-capacity to resist other infections and cancers. From 1981, when AIDS was first identified in the United States, through December 2002, 886,575 AIDS cases had been reported to the CDC. Of these cases, 501,669 (58 percent) are estimated to have died.

AIDS became a reportable disease in South Dakota in 1985 and HIV infection became reportable in 1988. Through December 2003 there were 443 cases of HIV/AIDS reported in the state (218 AIDS cases and 225 HIV cases). In 2003 there were 25 new cases of HIV reported and 14 new cases of AIDS diagnosed. Figure 37 shows the number of combined new HIV/AIDS cases reported to the DOH by year and the

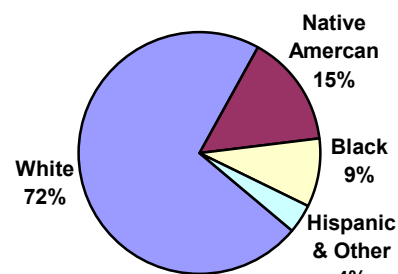
number of conversions to AIDS. South Dakota has the second lowest incidence rate of AIDS in the USA. In 2003 the incidence rate was 3.3 cases per 100,000.



In 2002 there were more women (62 percent) than men (38 percent) reported with HIV/AIDS. In South Dakota the number of females with HIV is still small, 19 percent cumulative as of December 2003, but the number is generally increasing yearly. Most women who become infected with HIV are in their childbearing years.

Nationally there are a disproportionate number of AIDS cases in the Black and Hispanic communities. South Dakota's minority groups are also disproportionately affected by HIV/AIDS (Figure 38). Blacks made up 9 percent of the HIV/AIDS cases in the state, but comprise less than 1 percent of the total population. Native Americans comprised 15 percent of the state's HIV/AIDS cases, but 9 percent of the population; and Hispanic & other residents accounted for 4 percent of the HIV/AIDS cases, but only 1 percent of the population. White people make up 89 percent of the state's population, and 72 percent of the HIV/AIDS cases.

Figure 38.
HIV/AIDS by Race or Ethnic Group,
South Dakota, 1985-2003. (n=418).

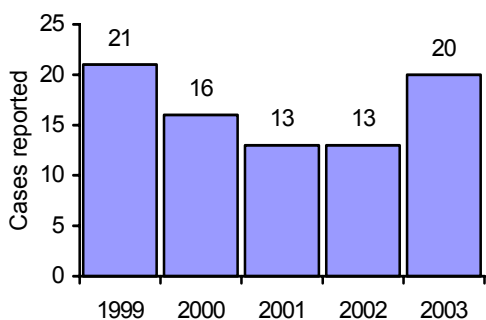


The DOH coordinates a statewide HIV/AIDS prevention and control program. Counseling and testing sites are located in Pierre, Aberdeen, Watertown, Dupree, Rapid City, and Sioux Falls. These sites provide free, confidential counseling and testing for HIV. A toll-free statewide hotline (1-800-592-1861) is available to answer questions about AIDS and HIV during working hours. The national 24-hour AIDS number is 1-800-342-2437.

TUBERCULOSIS

During calendar year 2003, 20 cases of active tuberculosis were reported (Figure 39) to the DOH, including 10 Native Americans (50 percent), 6 whites (30 percent) and 4 Asians (20 percent).

Figure 39.
Tuberculosis in South Dakota,
1999 – 2003.



The overall incidence rate was 2.6 per 100,000; with an incidence of 14.6 for Native Americans, 9.0 for whites and 69.4 for Asians. Of the cases reported in 2003, 11 were males (55 percent) and nine were females (45 percent).

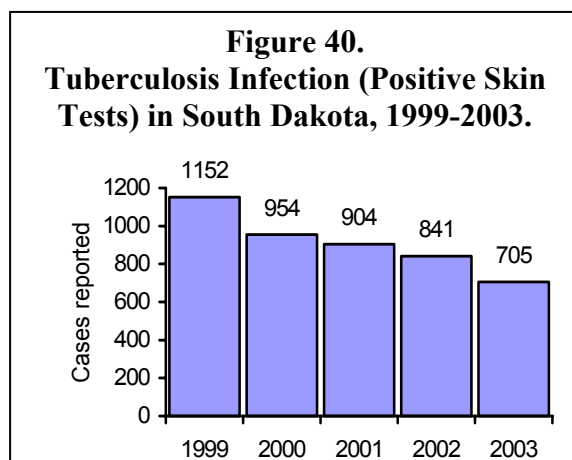
The DOH's goal is the elimination of tuberculosis in South Dakota. The objective of the State Tuberculosis Elimination Advisory Committee was to reduce the incidence of tuberculosis in South Dakota to no more than 3.5 cases per 100,000 population by the year 2010. This overall target has been reached, including the special objective for the Native American population, which is 15 cases per 100,000. The 2003 Native American case rate was 14.6 cases per 100,000. The Healthy People 2010 target is

1.0 new cases of tuberculosis per 100,000 per year.

The occurrence of tuberculosis in young children is of special concern. Each child case represents a failure to stop transmission of infection and a failure to prevent the emergence of disease in an unexposed person. There were two cases of tuberculosis reported in 2003 in children less than five years of age.

There were no tuberculosis cases reported with drug resistance in 2003. The only case of multi-drug resistant tuberculosis was reported in 1991.

In 2003 there were 705 reports of positive skin tests for tuberculosis infection (Figure 40). Since no data is collected on negative tests, it is not known how many people were skin tested overall. Skin testing is targeted to detect persons with latent tuberculosis infection and disease who would benefit from treatment. A positive skin test indicates that the person has been exposed to active tuberculosis, and the determination of active disease must follow.



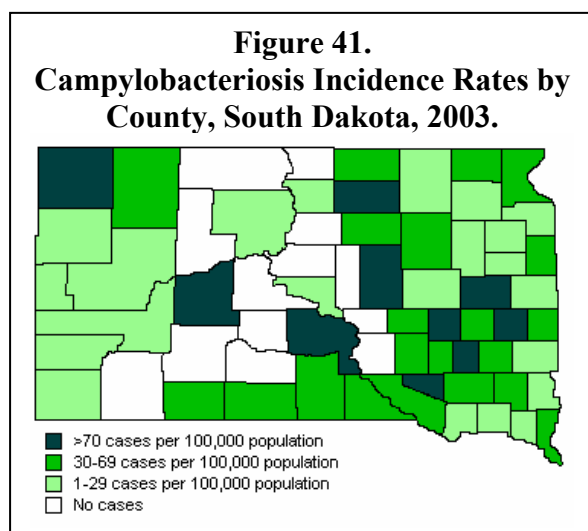
The DOH has an aggressive tuberculosis control strategy that includes contact investigations and rigorous oversight of patient treatment adherence. The challenge to eliminate tuberculosis in South Dakota rests with preventing and monitoring disease activation among the elderly, the Native American population, and foreign-born persons.

FOODBORNE and DIARRHEAL DISEASES

Campylobacteriosis. *Campylobacter* has been the most commonly isolated enteric bacteria in South Dakota since 1999 (Table 53). In 2003 there were 188 cases of campylobacteriosis, which is an incidence of 25 cases per 100,000 population. This was a 32 percent increase over the five-year baseline. This increase suggests a change in the transmission or the detection of campylobacteriosis in the state. Twenty-two percent of the cases were in children less than five years old. Counties with the highest incidence (cases per 100,000 population) included Sanborn (191), Douglas (146), Lyman (126), Edmunds (115) and Hand (109) (Figure 41).

Campylobacter is a spiral-shaped Gram negative bacteria that can cause diarrhea, often bloody, abdominal pain, vomiting, fever, nausea, and malaise. Most cases of campylobacteriosis are

relatively mild, lasting one to two days. Some cases,



however, are more severe and relapses occur in about 20 percent of patients. Complications may include convulsions, neonatal septicemia, extraintestinal infection, arthritis, Guillain-Barré syndrome, or Reiter syndrome. *Campylobacter* associated deaths are rare, occurring primarily in infants, the elderly, and immunocompromised individuals.

Salmonellosis. There were 131 culture-confirmed cases of salmonellosis reported in South Dakota in 2003, which was an incidence of 17 cases per 100,000 population. This was an increase of 8 percent from the five-year median. Twenty-one percent of the cases were reported in children less than five years old. Counties with the highest incidence (cases per 100,000 population) included Corson (119), BonHomme (56) and Roberts (50) (Figure 42).

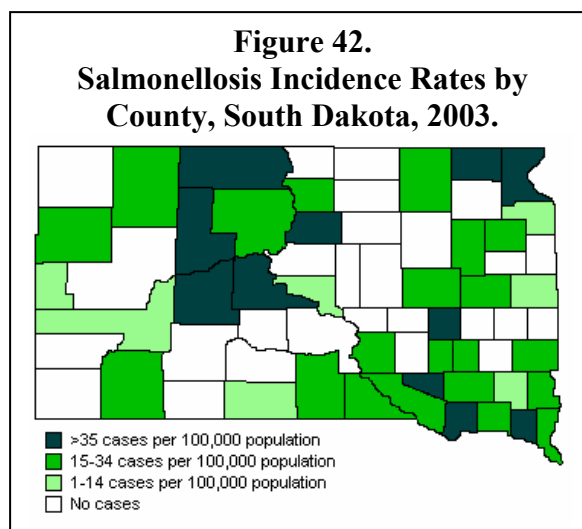
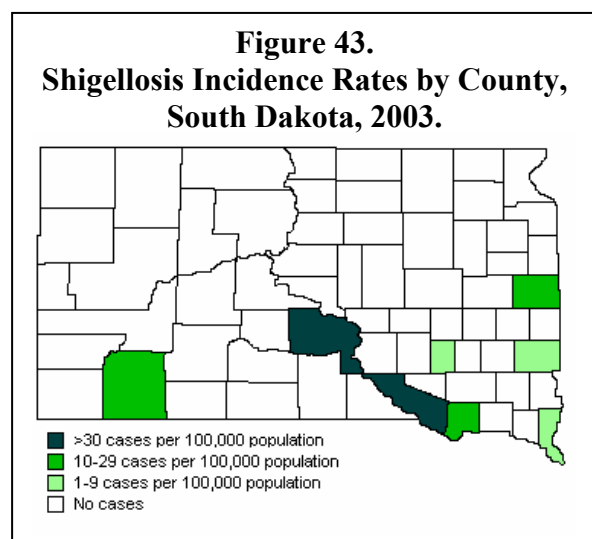


Table 57 shows the most commonly isolated serotypes of *Salmonella* over the past 11 years in South Dakota. *S. typhimurium* was the most commonly isolated serotype in 2003.

Table 57. Most Common Salmonella Serotypes, South Dakota, 1993-2003.

Salmonella serotype	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Total	Percent
Agona	3	2	3	4	2	2	0	2	0	0	0	18	1%
Bovismorbificans	0	1	2	0	0	2	1	0	1	0	0	7	1%
Braenderup	1	0	0	0	1	0	3	3	2	0	3	13	1%
Brandenburg	6	0	1	1	0	0	0	0	0	0	0	8	1%
Enteritidis	20	68	23	11	8	8	8	9	12	14	15	196	15%
Hadar	4	2	3	1	4	4	0	7	5	0	7	37	3%
Heidelberg	10	1	3	6	1	6	6	11	22	10	3	79	6%
Infantis	3	2	1	1	1	0	0	1	2	1	1	13	1%
Litchfield	0	0	0	0	0	1	2	1	0	2	1	7	1%
Montevideo	0	2	2	1	3	2	2	1	1	4	3	21	2%
Muenchen	2	0	2	0	3	2	4	2	1	3	2	21	2%
Muenster	0	0	0	0	0	2	1	2	1	2	0	8	1%
Newport	2	2	2	1	9	8	8	5	6	11	9	63	5%
Oranienburg	1	0	0	2	1	3	2	0	1	1	2	13	1%
Paratyphi A	0	0	0	0	0	1	0	1	0	0	0	2	0%
Paratyphi B	0	0	1	1	0	4	2	1	4	0	5	18	1%
Poona	0	1	0	2	0	0	1	0	0	0	0	4	0%
Reading	0	0	4	0	0	2	0	0	0	0	0	6	1%
Saint Paul	1	1	1	0	0	1	3	1	1	1	5	15	1%
Senftenberg	1	0	0	2	0	0	0	1	1	0	0	5	0%
Thompson	0	2	3	39	3	3	2	1	2	2	0	57	4%
Typhimurium	28	36	30	24	28	61	40	28	48	36	50	409	32%
Typhimurium-Copenhagen	0	3	5	7	15	3	2	5	0	0	0	40	3%
Other serotypes	17	20	22	16	11	17	13	18	41	34	25	234	18%
Total	99	143	108	119	90	132	100	100	151	121	131	1294	100%

Shigellosis. In 2001 South Dakota experienced a wide-scale outbreak of shigellosis. There were 716 cases of shigellosis reported, representing a 2210 percent increase over the five-year median. This was an incidence of 95 cases per 100,000 population, the highest in the USA. Twelve counties in the central-southwest portion of the state were most affected. Two years later, in 2003, Shigellosis cases have decreased back near baseline with 17 cases representing a 48 percent decrease over the five-year median. This was an incidence of two cases per 100,000 population. Figure 43 shows shigellosis incidence rates (cases per 100,000 population) by county in South Dakota for 2003.



Shigella sonnei was the most common species isolated since 1993 (68 percent), while *S. flexneri* was the second most common (Table 58).

Shigellosis is an intestinal infection causing diarrhea (may be mucoid or bloody), fever, nausea, vomiting and abdominal cramps. Complications, such as severe dehydration or seizures, may occur, especially among infants.

Table 58. Most Common *Shigella* Serotypes, South Dakota, 1993-2003.

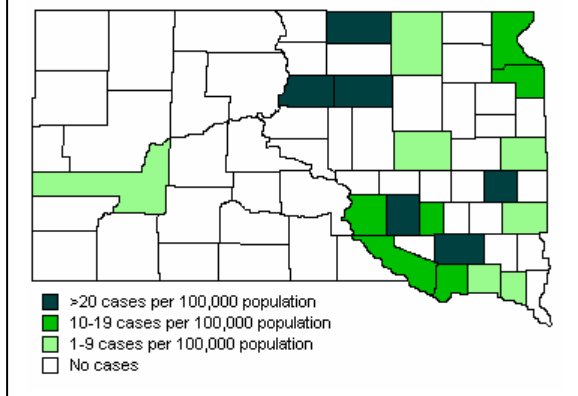
Year	S. flexneri	S. sonnei	S. boydii	Species UD	Total
1993	31	68	1	11	111
1994	16	163	0	28	207
1995	35	128	0	37	200
1996	28	55	0	11	94
1997	16	13	0	2	31
1998	12	16	0	5	33
1999	13	4	0	1	18
2000	2	2	0	4	8
2001	6	508	1	201	716
2002	5	113	0	39	157
2003	3	9	0	5	17
Total	167	1079	2	344	1592
Percent	10%	68%	<1%	22%	100%

Shigella is transmitted by the fecal-oral route (human feces), with a very small dose (10 organisms) sufficient to cause illness. Following exposure, illness usually follows after a one to four day incubation period. Transmission is typically person-to-person within families, child day care centers, and residential living services for the developmentally disabled. Food may also be contaminated by people not washing their hands properly. Shigellosis may also be transmitted by contaminated drinking or recreational water, anal intercourse, houseflies, or by fecally contaminated objects.

Enterohemorrhagic *Escherichia coli*.

Escherichia coli O157:H7 infection has been voluntarily reportable in South Dakota since 1994, and legally reportable since 1996. During 2003 there were 29 cases of *E. coli* O157:H7 reported, representing a 43 percent decrease from the five-year median. This was an incidence rate of four cases per 100,000 population. Fifty-five percent of the cases were in children less than 15 years of age. There was one case of HUS associated with *E. coli* infection. Figure 44 shows *E. coli* O157:H7 incidence rates (cases per 100,000 population) by county in South Dakota for 2003.

Figure 44.
***E. coli* O157:H7 Incidence Rates by**
County, South Dakota, 2003.



E. coli O157:H7 is only one of several enterohemorrhagic, shiga-toxin producing serotypes of the bacteria. There were also four cases of enterohemorrhagic *E. coli* (non-O157 serotype) reported.

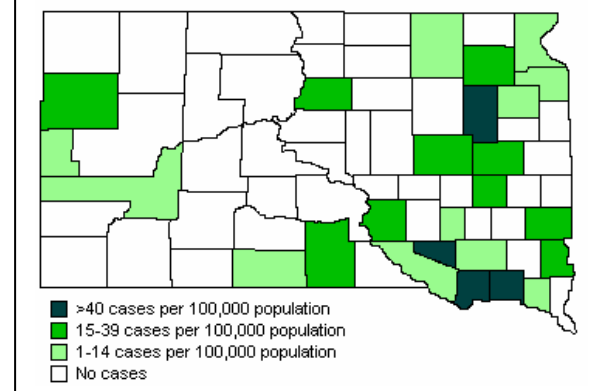
E. coli O157:H7 often causes severe bloody diarrhea and abdominal cramps. The illness usually resolves in five to 10 days. In some individuals, however, complications may involve severe hemorrhagic colitis, hemolytic uremic syndrome (HUS), or thrombotic thrombocytopenic purpura.

E. coli O157:H7 is transmitted by meat, water, fresh vegetables or other foods contaminated by the intestinal contents or manure of cattle, sheep, deer, and other animals. Human infection can be prevented by proper slaughtering methods, thorough cooking of meats, proper kitchen hygiene, pasteurization of fruit juices and dairy products, and handwashing after contact with cattle or manure. Individuals with *E. coli* O157:H7 infection are restricted from commercial food handling, child day care, or patient care until two successive negative fecal samples are collected.

Giardiasis. Giardiasis is a gastrointestinal disease caused by a protozoan parasite called *Giardia lamblia* (*G. intestinalis*) which is transmitted person-to-person or by contaminated water. During 2003, 89 cases of giardiasis were

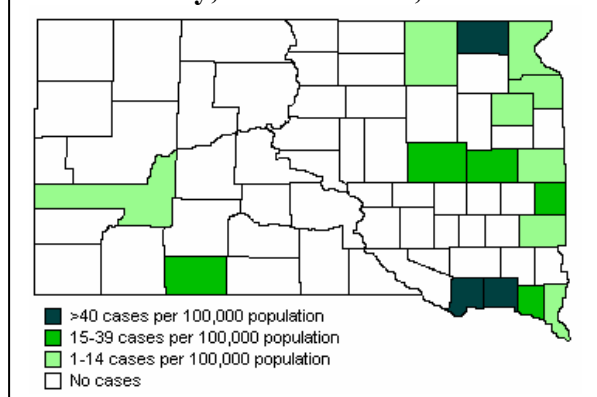
reported. This represents a 17 percent decrease from the five-year median. Thirty-five percent of the cases were from children less than 15 years of age. Counties with the highest incidence (cases per 100,000 population) included BonHomme (70) and Yankton (51) (Figure 45).

Figure 45.
Giardiasis Incidence Rates by County,
South Dakota, 2003.



Cryptosporidiosis. Cryptosporidiosis is a protozoan diarrheal disease transmitted by cattle and human feces. The disease has been reportable since 1996. Since then, 169 cases have been reported statewide. In 2003 there were 49 cases reported representing a 220 percent increase over the five-year median. Generally, an increase in reported cases is occurring nationally with outbreaks often being traced to exposures to contaminated swimming pools and other recreational water sources. The counties with the highest incidence (cases per 100,000 population) include BonHomme (97) and Yankton (74) (Figure 46).

Figure 46.
Cryptosporidiosis Incidence Rates by
County, South Dakota, 2003.



Foodborne Outbreaks. The Office of Disease Prevention investigated only one foodborne outbreak of gastroenteritis in May of 2003. The outbreak sickened 22 individuals attending an economic development meeting, with the predominant symptoms being diarrhea and abdominal cramps. A total of 83 participants were interviewed. There were no deaths or hospitalizations. The likely cause of the outbreak was improper preparation and temperature abuse

of roast pork and beef. The causative agent was likely an anaerobic toxin-producing *Clostridium perfringens* bacteria, which would have undergone amplification and toxin production in the interior of the meats. The toxin produced from the bacteria is heat stable and would have retained activity through the cooking process employed. Four stool samples tested negative for standard bacterial and viral enteric agents by the State Laboratory; however, no test was employed to detect an anaerobic bacteria or related toxin. Fortunately, good epidemiological data including the symptom profile of ill persons, latency time from exposure to illness onset, duration of symptoms, and the statistical implication of the meats and their reported methods of their preparation, give strong evidence for *Clostridium perfringens* toxin as the causative agent. Education was provided to the owner of the facility and food preparers involved to prevent reoccurrences of this disease.

INFLUENZA

The CDC's Division of Viral and Rickettsial Diseases, collaborating with the World Health Organization, collects and analyzes influenza viral isolates and data from state health departments and other surveillance sites. The information presents a state, national and global description of the seasonal outbreak.

South Dakota participates in this international surveillance network through the Department of Health, Office of Disease Prevention and the State Public Health Laboratory. The laboratory cultures and characterizes influenza virus isolates while the Office of Disease Prevention investigates and reports influenza-associated morbidity.

We define influenza-associated morbidity as being those illnesses with a fever $\geq 101^{\circ}$ F and three or more cold symptoms such as cough, coryza, headache, chills, sore throat, or myalgia. Surveillance for influenza typically runs each October through May in the Northern Hemisphere. South Dakota's laboratory surveillance for influenza viruses involves a statewide network of sentinels including physician offices with a laboratory, hospital laboratories, large clinic practice labs, college health services, and community health centers that collect throat swabs on patients meeting the above mentioned clinical criteria. The State Public Health Laboratory provides the culture/transport media and reports the culture results, including the subtype of virus isolated. Other surveillance activities include monitoring school absenteeism in sentinel communities, URI visits in emergency rooms, soliciting reports from private laboratories that provide rapid diagnostic test services for URI's, and passive surveillance for outbreak activity in long term care facilities. The USD Clinical Virology Laboratory also processes viral respiratory specimens.

South Dakota's first influenza cases of the 2003-2004 season were reported during the week ending 15 November 2003. During that week two culture confirmed cases of influenza A (later

typed as A/H3N2) were detected in Minnehaha and Pennington Counties. Influenza activity increased swiftly over the next four weeks peaking in mid-December (see figure below). Thereafter, activity decreased sharply with the last report on 23 February 2004. (Figure 47).

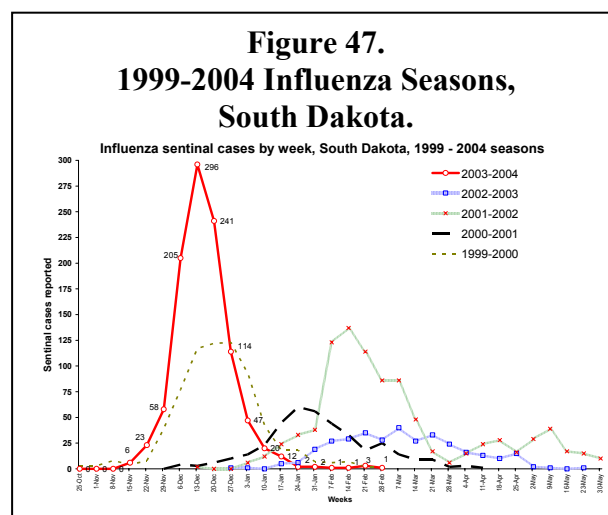


Table 59.
Age Distribution of Sentinel
Influenza Cases, South Dakota,
2003-2004 Season.

Age group	n	Percent
< 1 yr	127	12%
1 - 9 yr	320	31%
10 - 19 yr	229	22%
20 - 29 yr	98	10%
30 - 39 yr	44	4%
40 - 49 yr	25	2%
50 - 59 yr	38	4%
60 - 69 yr	49	5%
70 - 79 yr	50	5%
80 - 89 yr	33	3%
90+ yr	14	1%
TOTAL	1027	100%

season included RSV (respiratory syncytial virus) 865, adenovirus 71, and parainfluenza-1, -2 and -4, 293.

Table 60.
Viral Respiratory Reports from the South Dakota
Public Health Laboratory (SDPHL) and the USD**
Clinical Virology Laboratory (USD-CLV), 1 Nov**
2003 – 29 May 2004.

	SDPHL [□]	USD-CVL [°]	TOTAL
Influenza A	200*	905	1105
Influenza B	0	2	2
Adenovirus	0	71	71
RSV	2	863	865
Parainfluenza-1	2	115	117
Parainfluenza-2	0	0	0
Parainfluenza-3	1	136	137
Parainfluenza-4	0	39	39

*138 isolates of Influenza A/H3N2, 62 untyped Influenza A
 **Represents all specimens tested and may include out-of-state cases
[□]In cooperation with Influenza Surveillance Sentinel Sites

Nationally, influenza viruses were first isolated in Texas in October 2003. The percentage of positive influenza tests and the proportion influenza-like illness in outpatient visits to sentinel physicians increased substantially in November and peaked in mid-December.

Nationally, influenza A(H3N2) viruses were most commonly isolated, with small numbers of influenza B and influenza A (H1) viruses identified. 130,577 respiratory specimens were tested for influenza viruses; 24,649 (19 percent)

were positive, 99 percent were influenza A viruses and 1 percent were influenza B viruses. Among the influenza A viral isolates subtyped 99.9 percent were influenza A(H3N2), and 0.1 percent were influenza A(H1) viruses. Of the influenza A(H3N2) isolates characterized 89 percent were antigenically similar to the drift variant, A/Fujian/411/2002(H3N2), and 11 percent were similar to the vaccine strain A/Panama/2007/99(H3N2). A report of the 2003-2004 influenza season and the composition of the 2004-2005 influenza vaccine is found in the 2 July 2004 MMWR 53/25, page 547-552, and the ACIP *Recommendations on Prevention and Control of Influenza* are found in the 28 May 2004 MMWR 53/RR6. Link:

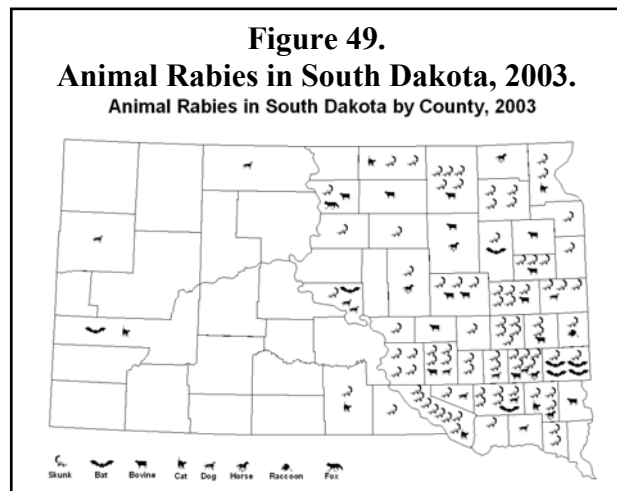
www.cdc.gov/mmwr/index.html. Surveillance for influenza is active year-round, but intensifies between October and May. South Dakota's laboratory surveillance for influenza viruses involves a statewide sentinel network including clinics, hospital laboratories, college health services, and community health centers that collect throat swabs from patients with influenza-like illness. The State Public Health Laboratory provides the culture/transport media and reports the culture results of the viral subtype isolated. The USD Clinical Virology Laboratories in Sioux Falls and Rapid City provides influenza diagnostic services in South Dakota and collaborates in SD influenza surveillance. Five SD health care providers participate in the CDC's Sentinel Physician program. These Sentinel Physicians practice in Sioux Falls, Pierre, Isabel and Rapid City. Thirty-one sites throughout the state voluntarily reported their influenza testing and cases. In South Dakota all laboratory confirmed cases of influenza are mandatory reportable events. Clinics and laboratories in SD are also required to submit weekly reports of the number of rapid antigen influenza positive tests and the total number of influenza tests performed. During the influenza season weekly summary reports are posted on the SD Department of Health Web site at: www.state.sd.us/doh/Flu/index.htm.

RABIES

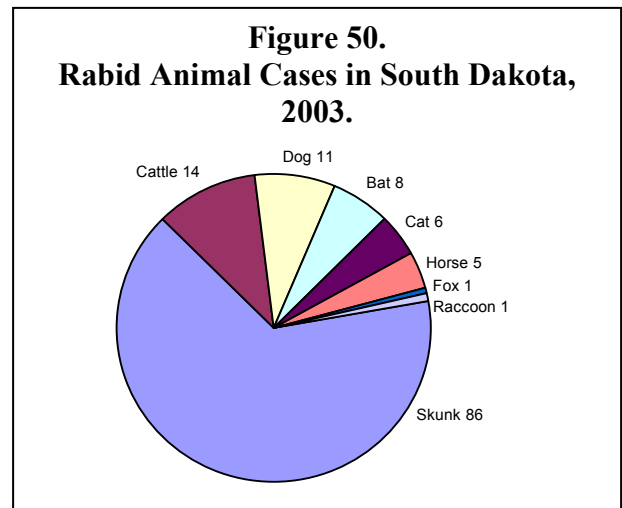
Rabies is a fatal, viral disease affecting the central nervous system. Although rabies is fatal, it is preventable.

Rabies is enzootic in South Dakota and the skunk is the primary disease reservoir. Rabies may be transmitted to pets, livestock, or humans by infectious saliva, usually through bites.

One-hundred thirty-two (132) animals tested positive for rabies in South Dakota in 2003 (Figure 49). These included 96 wild animals (86 skunks, eight bats, one fox and one raccoon) and 36 domestic animals (14 cattle, 11 dogs, six cats and five horses) (Figure 50). This is a 38 percent increase from the previous year, 2002, when 96 animals tested positive. There were no human rabies cases in South Dakota in 2003. Our last human case was in 1970.

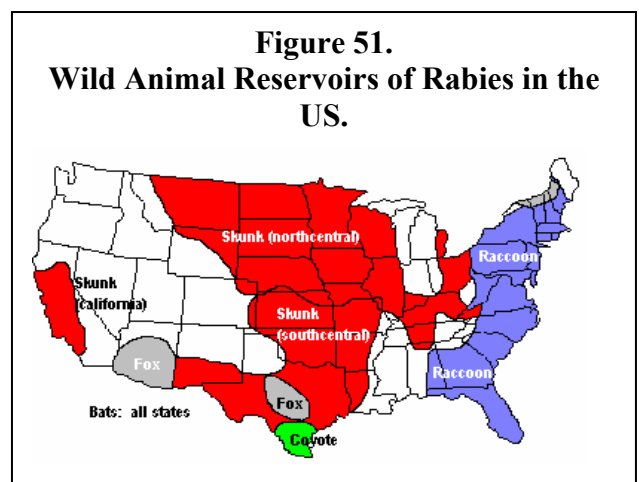


Nationally there were three human rabies cases, all deaths, in 2003. The deaths occurred in Virginia, California and Puerto Rico, due to raccoon, mongoose and bat rabies virus, respectively. Since 1990, there have been 38 cases of human rabies reported in the United States, 31 percent of which were infected with a bat rabies virus strain.



The common skunk (*Mephitis mephitis*) is the enzootic rabies reservoir in South Dakota (Figure 51). Since 1990, 68 percent of the skunks tested have been rabid. Bat rabies is also enzootic in South Dakota with 67 positive bats since 1990, 3 percent (Table 61). Figure 52 shows confirmed positive cases of all animal rabies by year since 1970.

Rabies is not considered enzootic in other wild animals in South Dakota. Since 1990, however, rabies has been detected in eight fox, three badgers, three raccoons, two bison, one opossum and one shrew. The other wild animals are probably spillover rabies following exposure to rabid skunks.



During 2003 every month had animal rabies cases reported in South Dakota, with April and July having the most events, 14 and 13 respectively.

The latest national rabies surveillance information is reported on 2002 data (Krebs, et. al., 2003). Nationally, there were 7,967 cases of animal rabies reported in 2002. According to Krebs 93 percent of the rabies cases were among wild animals and seven percent were from domestic animals. Nationally domestic animals included 299 cats, 166 cattle, 99 dogs, 58 horses/mules, 12 goats, three sheep and one swine. Wild animals testing positive for rabies included 2,891 raccoons, 2,433 skunks, 1,373 bats, 508 fox, 67 mongooses, 49 groundhogs, 33 bobcats, nine deer, four coyotes, two beavers, one fisher, one javelina, one otter, one rabbit, and one wolf-dog hybrid. Nationally rabies increased seven percent between 2001 and 2002.

Two laboratories do rabies in South Dakota: the Animal Disease Research Diagnostic Laboratory in Brookings and the State Public Health Laboratory in Pierre. Both laboratories use the direct fluorescent antibody (DFA) technique. During 2003 the Brookings laboratory tested 740 animals (101 positive, 14 percent) and the Pierre laboratory tested 352 animals (29 positive, eight percent). Two rabid animals were also tested in a neighboring state laboratory. The case definition of a confirmed animal rabies case is a positive DFA test, performed preferably on central nervous system tissue, or the isolation of rabies virus in cell culture or in a laboratory animal.

Rabies consultations are done by the Office of Disease Prevention, South Dakota Department of Health, seven days a week. Consultations are based on current Centers for Disease Control and Prevention (CDC) recommendations*. We strive to recommend appropriate rabies prevention measures and to minimize unnecessary and inappropriate post-exposure prophylactic treatment.

Figure 52.
Confirmed Positive Cases of Animal Rabies in SD by Year, 1970-2003.

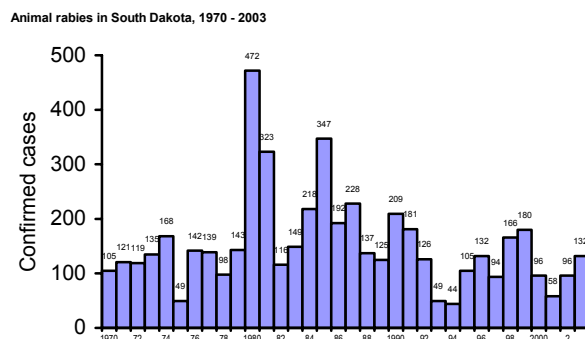


Table 61. Animals Tested and Confirmed Rabies Cases in South Dakota, 1990-2003.

Animal	Total tested	Positive	Percent Positive
Skunk	1676	1142	68%
Cattle	1945	203	10%
Dog	2668	98	4%
Cat	3850	82	2%
Bat	1935	67	3%
Horse	310	47	15%
Fox	83	8	10%
Sheep	157	6	4%
Pig	28	3	11%
Badger	20	3	15%
Raccoon	782	3	0%
Goat	33	2	6%
Bison	9	2	22%
Opossum	59	1	2%
Shrew or mole	7	1	14%
Rodents*	434	0	0%
Deer, elk, donkey, llama	82	0	0%
Weasel, ferret, mink	68	0	0%
Coyote or wolf	52	0	0%
Muskrat	37	0	0%
Squirrel or chipmunk	37	0	0%
Woodchuck	12	0	0%
Rabbit or hare	10	0	0%
Bobcat or bear	5	0	0%
Other animals	14	0	0%
TOTAL	14,313	1668	12%

*rodents (rat, mouse, prairie dog, gopher, beaver, porcupine, vole)

Table 62. Cases of Animal Rabies, by County, South Dakota, 1990 – 2003.					
County	2003		1990 – 2003		
	Pos	Neg	Pos	Neg	% Pos
Aurora	6	3	27	90	23%
Beadle	5	18	54	229	19%
Bennett	0	0	0	24	0%
Bon Homme	1	5	11	91	11%
Brookings	4	32	69	629	10%
Brown	6	38	68	406	14%
Brule	4	2	22	131	14%
Buffalo	1	0	6	24	20%
Butte	1	27	38	255	13%
Campbell	0	4	20	64	24%
Charles Mix	9	14	32	176	15%
Clark	2	9	36	94	28%
Clay	2	7	6	123	5%
Codington	1	19	52	305	15%
Corson	1	0	7	23	23%
Custer	0	6	4	43	9%
Davison	2	19	41	416	9%
Day	4	4	48	145	25%
Deuel	1	12	49	245	17%
Dewey	0	1	24	76	24%
Douglas	2	1	23	98	19%
Edmunds	1	4	18	96	16%
Fall River	0	12	4	189	2%
Faulk	1	2	22	56	28%
Grant	1	8	31	209	13%
Gregory	1	7	13	110	11%
Haakon	0	0	9	81	10%
Hamlin	4	12	54	154	26%
Hand	2	4	30	98	23%
Hanson	3	0	14	59	19%
Harding	0	3	11	33	25%
Hughes	4	14	33	283	10%
Hutchinson	7	15	60	261	19%
Hyde	0	5	18	100	15%
Jackson	0	4	2	82	2%
Jerauld	1	0	18	61	23%
Jones	0	0	3	24	11%
Kingsbury	6	15	59	239	20%
Lake	3	14	35	224	14%
Lawrence	0	5	20	174	10%
Lincoln	1	12	12	231	5%
Lyman	0	2	2	55	4%
Marshall	1	8	27	136	17%
McCook	8	7	38	177	18%
McPherson	3	6	34	128	21%
Meade	0	10	29	254	10%
Mellette	0	1	1	17	6%
Miner	5	8	28	94	23%
Minnehaha	6	297	83	2297	3%
Moody	2	13	37	159	19%
Pennington	2	128	46	1038	4%
Perkins	0	3	10	43	19%
Potter	1	1	11	39	22%
Roberts	3	19	47	260	15%
Sanborn	1	9	22	82	21%
Shannon	0	9	0	52	0%
Spink	2	7	25	144	15%
Stanley	0	1	3	23	12%
Sully	0	0	7	18	28%
Todd	0	6	0	80	0%
Tripp	2	7	15	157	9%
Turner	5	18	42	297	12%
Union	0	9	6	136	4%
Walworth	3	31	38	313	11%
Yankton	1	5	14	191	7%
Ziebach	0	0	0	4	0%
South Dakota	132	962	1668	12645	12%

RABIES ADDRESSES, TELEPHONE NUMBERS and WEB SITES

Department of Health, Office of Disease Prevention
(rabies consultations)
615 East Fourth Street
Pierre, SD 57501-1700
Phone: 605-773-3737; 1-800-592-1861;
after hours cell phone 605-280-4810
Web: www.state.sd.us/doh/Pubs/rabies.htm

Department of Health, Public Health Laboratory
(rabies testing and submitting specimens)
615 East Fourth Street
Pierre, SD 57501-1700
Phone: 1-800-592-1861 or 605-773-3368
Web: www.state.sd.us/doh/Lab/rabies.htm

CDC Rabies homepage:
www.cdc.gov/ncidod/dvrd/rabies/default.htm

Animal Disease Research and Diagnostic Laboratory
(rabies testing)
Box 2175, North Campus Drive
South Dakota State University
Brookings, SD 57007-1396
Phone: 605-688-5171 Web: www.vetsci.sdstate.edu

South Dakota Animal Industry Board (livestock and other
animal veterinary and regulatory issues)
441 S. Fort Street, Pierre, SD 57501-4503
Phone: 605-773-3321 Web: www.state.sd.us/aib/

South Dakota Bat Working Group
http://nat_hist.sdstate.edu/SDBWG/SDBWG.html

References:

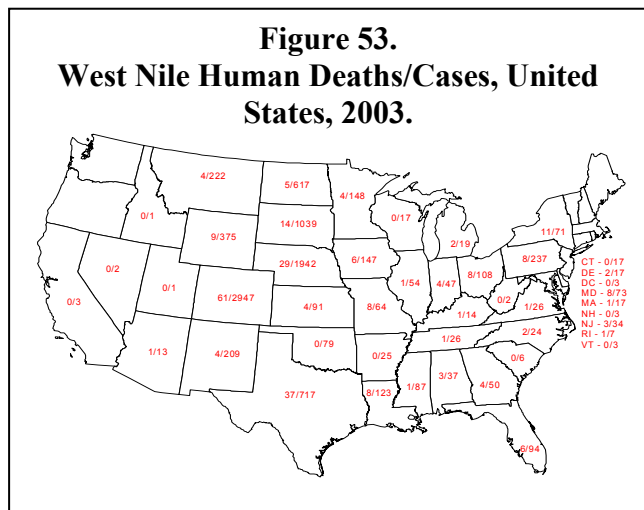
- *Centers for Disease Control and Prevention. Human rabies prevention – United States, 1999: Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 1999; 48 (No. RR-1).
www.cdc.gov/mmwr/preview/mmwrhtml/00056176.htm
- Centers for Disease Control and Prevention. Compendium of animal rabies prevention and control, 2003: National Association of State Public Health Veterinarians, Inc. MMWR 2003; 52 (No. RR-5).
www.cdc.gov/mmwr/preview/mmwrhtml/rr5205a1.htm
- Krebs, JW, JT, Wheeling, and JE Childs. 2003. Rabies surveillance in the United States during 2002. Journal of the American Veterinary Medical Association 223: 1736-1748.

West Nile Virus

West Nile virus (WNV) was first detected in the Western Hemisphere in 1999 in New York City. The virus spread west across the continent, reaching South Dakota in 2002. West Nile virus is now endemic in much of North America, including South Dakota, and continues to threaten our birds, our horses, and most importantly our people.

2003 was the fifth year of WNV transmission in North America and the second transmission season in South Dakota. The 2002 epidemic centered near the Mississippi and Ohio River valleys, whereas the 2003 epidemic was centered in Great Plains region. In 2003 North America experienced the largest ever recorded arboviral epidemic. South Dakota had the third most WNV cases and the highest incidence of neuroinvasive disease (NID) in the country.

Figure 53.
West Nile Human Deaths/Cases, United
States, 2003.



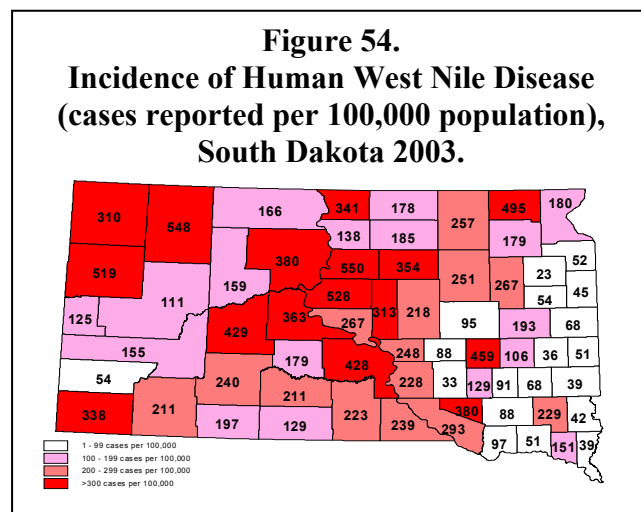
Nationally in 2003 there were 9,868 human WNV cases disease reported, with 262 deaths. The WNV cases included 2,863 NID cases (encephalitis or meningitis), 6,829 with WNV fever, and 161 other diagnostic status. The national median age was 47 years for all cases (range one month to 99 years) and 77 years for WNV deaths (range one month to 97 years).

In South Dakota there were 1,039 human cases of WNV disease and two cases of St Louis

Encephalitis (SLE) reported in 2003 (Table 64). West Nile and SLE are both mosquito-borne Flavivirus that cause similar encephalitides. Of these cases 171 were diagnosed with neuro-invasive disease (NID 16 percent) and 870 had West Nile fever (84 percent), a milder form of the disease. There were 14 WNV-related deaths reported (Figure 53). In addition, 19 individuals also developed acute flaccid paralysis associated with WNV infection. There were nine cases of pregnancy associated with WNV infection reported and investigated. During the first year of transmission, 2002, there were 37 human WNV cases, including 14 cases of NID and 23 cases of WN Fever.

Human WNV disease was reported in every South Dakota county in 2003. Pennington County had the most cases, 139, and also had the most deaths, four. The overall incidence of West Nile disease was 138 cases per 100,000 population. Figure 54 shows the incidence by county. Potter County had the highest incidence of WNV disease with 550 cases per 100,000 population; whereas, Codington County had the lowest incidence with 23 reported cases per 100,000. The high incidence counties were in the western and central part of the state. The overall statewide incidence of WNV NID was 23 cases per 100,000.

Figure 54.
Incidence of Human West Nile Disease
(cases reported per 100,000 population),
South Dakota 2003.



*Incidence: cases per 100,000 population

The screening of donated blood has enhanced the safety of the blood supply and prevented many cases of WNV disease. Nationally, at least 818 WNV viremic donations were detected and removed from the blood supply. In South Dakota 60 viremic blood donations were detected and removed from the blood supply. The South Dakota Department of Health also investigated four events of viremic blood transfusions or blood recipients becoming ill with WNV symptoms following transfusion.

Overall, 53 percent of the WNV cases were male (551) and 47 percent were female (490), Table 64. Males accounted for a disproportionate number of NID cases (62 percent) and deaths (71 percent). The racial profile of South Dakota WNV cases shows 90 percent (932) white cases, 10 percent (107) Native American cases, and 0.2 percent (2) cases of other races, which reflects the race proportions of the state. Native Americans, however, had a disproportionate share severe morbidity and death with 18 percent of NID cases and 21 percent of deaths.

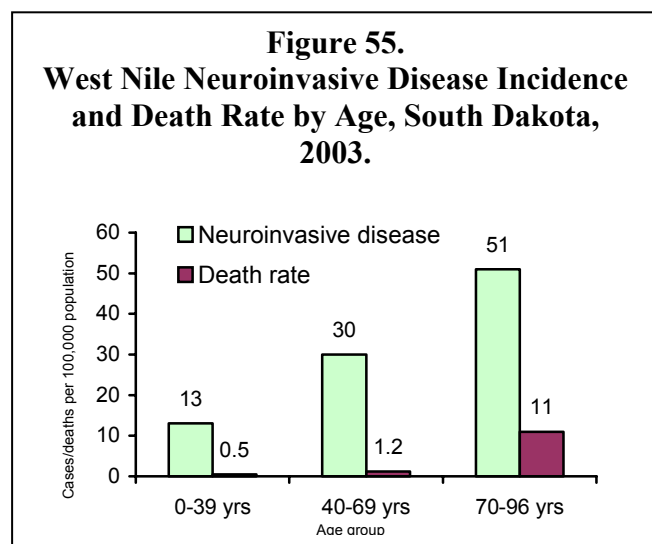
The median age of South Dakota cases was 44 years (range <1 month – 96 years). The median age increased with the NID case (50 years) and deaths (76 years). The risk of NID is highest in individuals over 50 years of age. The highest incidence of NID

Table 63. West Nile Human and Animal Reports, South Dakota, 2003.

County	Neuroinvasive disease	WN Fever	Total cases	Deaths	Blood donors	Birds	Horses	Other mammal
Aurora	0	1	1	0	0	1	0	0
Beadle	2	14	16	0	0	10	0	0
Bennett	2	5	7	1	0	2	1	0
Bon Homme	1	6	7	0	1	0	0	0
Brookings	4	15	19	0	0	10	2	0
Brown	6	84	90	1	8	4	3	0
Brule	2	10	12	0	0	0	1	0
Buffalo	2	3	5	0	0	0	0	0
Butte	7	40	47	0	4	2	4	0
Campbell	2	4	6	0	0	0	2	0
Charles Mix	2	25	27	0	1	0	0	0
Clark	2	9	11	0	1	0	1	dog
Clay	3	17	20	1	1	12	0	0
Codington	1	5	6	0	0	2	0	0
Corson	3	4	7	0	0	0	0	0
Custer	0	4	4	0	0	1	8	0
Davison	5	19	24	0	3	5	0	0
Day	1	10	11	0	0	4	0	0
Deuel	1	1	2	0	0	1	1	0
Dewey	5	18	23	0	0	0	0	0
Douglas	0	13	13	0	1	1	0	0
Edmunds	0	8	8	0	2	0	0	0
Fall River	7	18	25	1	0	1	10	0
Faulk	2	7	9	0	1	0	0	0
Grant	0	4	4	0	0	0	0	0
Gregory	0	11	11	0	0	0	1	0
Haakon	1	8	9	0	1	1	0	0
Hamlin	1	2	3	0	0	3	0	0
Hand	3	5	8	0	0	3	1	0
Hanson	1	2	3	0	0	0	1	0
Harding	3	1	4	0	0	0	0	0
Hughes*	3	41	44*	0	3	3	0	0
Hutchinson	2	5	7	1	4	1	0	0
Hyde	1	4	5	0	0	0	0	0
Jackson	0	6	6	0	0	0	7	0
Jerauld	2	0	2	0	2	1	0	0
Jones	0	2	2	0	0	0	1	0
Kingsbury	2	9	11	0	0	2	0	0
Lake	1	3	4	0	0	4	0	0
Lawrence	1	26	27	0	1	2	0	0
Lincoln	1	10	11	0	0	3	1	0
Lyman	2	15	17	0	0	1	1	0
Marshall	0	23	23	0	1	0	0	0
McCook	1	3	4	0	0	1	0	dog
McPherson	0	5	5	0	0	0	0	0
Meade	6	21	27	1	0	3	6	0
Mellette	2	3	5	0	0	0	0	0
Miner	0	3	3	0	0	4	0	0
Minnehaha	15	43	58	0	3	9	0	squirrel
Moody	0	1	1	0	0	3	0	0
Pennington	28	111	139	4	15	11	8	0
Perkins	1	17	18	0	0	0	1	0
Potter	3	11	14	0	1	0	0	0
Roberts	1	16	17	0	1	1	0	0
Sanborn	2	10	12	1	0	5	0	0
Shannon	11	16	27	2	0	0	1	0
Spink	4	14	18	0	0	0	0	0
Stanley*	0	10	10*	0	0	0	1	0
Sully	0	8	8	0	0	0	0	0
Todd	3	9	12	0	0	0	4	0
Tripp	3	11	14	0	0	0	1	0
Turner	2	18	20	0	1	8	0	0
Union	1	4	5	0	4	1	0	0
Walworth	2	6	8	0	0	0	0	0
Yankton	2	9	11	0	0	5	0	0
Ziebach	0	4	4	1	0	0	5	0
TOTAL	171	870	1041	14	60	131	73	4

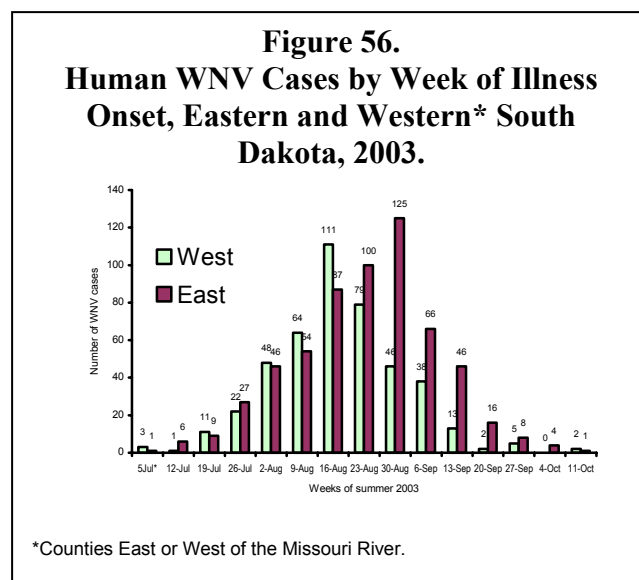
*Hughes and Stanley County each had 1 case of St. Louis Encephalitis

cases, 51 per 100,000, is among those 70 years and older (Figure 55). Of those cases over 70 years, 39 percent developed NID, whereas 14 percent of the younger cases developed NID (Table 64). The number and rate of WNV-associated death is also highest in those cases 70 years and older. Nine of the 14 WNV deaths (64 percent) occurred in this age group.



The first South Dakota WNV detection in 2003 was an antibody test on 8 May from a healthy, sentinel horse in Lincoln County. The initial bird detection of WNV was a crow from Hamlin County on 6 June, and the first mosquito detection was a pool of *Culiseta inornata* on 10 July from Hughes County. The first sick horse was diagnosed on 17 July in Jackson County.

The first South Dakotan to become ill was on 1 July, and the last person to become ill was on 10 October. This was a 101 day human WNV epidemic. The timeline graphic in Figure 56 shows the WNV human activity in eastern and western South Dakota in 2003. In the counties west of the Missouri River human WNV activity peaked during the week ending August 16th, while East River activity peaked two weeks later during the week ending August 30th.



Birds were collected and tested as leading surveillance indicators of WNV activity. Three-hundred-forty-six birds were submitted in 2003, of which 131 tested WNV positive using PCR on brain tissue, 142 tested negative, and 85 were not tested due to decomposition or wrong species submission. The birds testing positive included 46 blue jays, 41 crows, nine goshawks, four pelicans, three gyrfalcons, three prairie chickens, three red tail hawks, three sparrows, two mourning doves, two finches, two magpies, two owls, one cormorant, one crossbill, one duck, one goose, one robin, one woodpecker, and five birds of unknown species. Oral swab testing was run in parallel on crows and blue jays in 2003. West Nile positive birds were detected before human illness in 21 counties covering 62 percent of the state's population.

In 2003 there were 73 horse WNV cases reported from 25 South Dakota counties. There were also two dogs and two WNV positive squirrels reported in 2003. During the previous year, 2002, there were 690 horses with WNV reported, with detections in all 66 counties. During the 2002 equine epizootic 34 percent of non-vaccinated horses with WNV illness died (A.R. Jones et al., Dept of Veterinary Science, SD State University).

Table 64.
West Nile and SLE Clinical Syndromes by
Gender, Race and Age, South Dakota 2003.

	Neuroinvasive disease cases	Fever cases	Total cases	Deaths (%)
Total cases (%)	171 (16%)	870(84%)	1041	14
GENDER				
Males	107 (19%)	444 (81%)	551	10 (71%)
Females	64 (13%)	426 (87%)	490	4 (29%)
AGE				
0 - 39 years	55 (14%)	348 (86%)	403	2 (14%)
40 - 69 years	75 (14%)	457 (86%)	532	3 (21%)
70 - 99 years	41 (39%)	65 (61%)	106	9 (64%)
RACE				
White	141 (15%)	791 (85%)	932	11 (79%)
Native American	30 (28%)	77 (72%)	107	3 (21%)
Other	0 (0%)	2 (100%)	2	0

The principle route of human WNV infection is the bite of an infected mosquito. In 2003, 31 pools of mosquitoes tested PCR positive for WNV from four South Dakota counties. The mosquitoes testing WNV positive included the following species (percent of positives) *Culex tarsalis* (65 percent), *Aedes vexans* (10 percent), *Ochlerotatus dorsalis* (six percent), *Ochlerotatus fitchii* (six percent), *Aedes cinereus* (three percent), *Culex pipiens* (three percent), *Culiseta inornata* (three percent) and *Culex salinarius* (three percent). *Culex tarsalis* is thought to be the critical bridge vector between infected birds and humans.

As summer 2004 approaches we are preparing again for WNV transmission in South Dakota. Communities should improve their mosquito control programs, horses should be vaccinated, citizens should submit dead birds for testing, eliminate places where mosquitoes can grow, and everyone should use personal protective measures.

Although there are limitations to West Nile surveillance, we are provided with useful information on monitoring and managing the epidemic. In 2004 surveillance for West Nile includes tracking ill human, blood donor, equine, bird and mosquito detections, as well as pilot sentinel chicken flocks. It is not known if the human cases of WNV disease will increase or decrease in 2004. Health care providers must

appreciate that serologic testing for WNV becomes more complicated after the WNV infection becomes regionally endemic due to residual anti-WNV IgM that may be still detectable from last summer's infections.

During WNV season individuals with severe or unusual headaches should seek medical care as soon as possible. Physicians are encouraged to have a high index of suspicion for WNV disease. Free WNV testing is available at the South Dakota Public Health Laboratory for ill suspects. We do not encourage testing mildly ill patients or individuals who wish to know if they have an antibody titer. Serum or CSF should be submitted to the Public Health Laboratory. If you have any questions call the laboratory at 1-800-592-1861.

OTHER INFECTIOUS DISEASES

***Neisseria meningitidis* invasive disease.** There was a single case of invasive *Neisseria meningitidis* disease reported in 2003. The case was serogroup C. This is an incidence of 0.1 cases per 100,000 population. The Healthy People 2000 target was 1.0 new cases of meningococcal disease per 100,000 population.

Vector borne diseases in South Dakota in 2003 included five cases of Rocky Mountain spotted fever, five cases of tularemia, three cases of imported Malaria, two cases of Saint Louis Encephalitis and one case each of Lyme disease and Hantavirus Pulmonary Syndrome. The second year of transmission of West Nile virus disease in humans occurred in 2003 as detailed in the previous section. There were no cases of plague or human rabies reported in South Dakota in 2003.

Other Infectious Diseases. There were 25 cases of invasive Group A *Streptococcus*, 14 cases of invasive Group B *Streptococcus*, and one case of invasive drug resistant *Streptococcus pneumoniae* reported in 2003 (Table 53). There were also four cases of non O157:H7 enterohemorrhagic *E. coli*, one case each of Staphylococcal Toxic Shock Syndrome and Hemolytic Uremic Syndrome of unknown etiology reported in 2003.

Two cases of legionellosis and one case each of brucellosis and wound botulism were also reported in 2003.